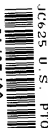


01/25/99



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Please type a plus sign (+) inside this box → ☐

PTO/ISB/05 (12/97)

Approved for use through 09/30/00. OMB 0651-0032  
Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

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<b>UTILITY PATENT APPLICATION TRANSMITTAL</b>  (Only for new nonprovisional applications under 37 CFR 1.53(b))	Attorney Docket No.	IMPI:035--1	Total Pages	9
	First Named Inventor or Application Identifier			
	Richard J. Lazzara			
	Express Mail Label No.	EL056840068US, filed 1/25/99		

<b>APPLICATION ELEMENTS</b> See MPEP chapter 600 concerning utility patent application contents.	<b>ADDRESS TO:</b> Assistant Commissioner for Patents Box Patent Application Washington, DC 20231
<p>1. <input checked="" type="checkbox"/> <b>Fee Transmittal Form</b> (Submit an original, and a duplicate for fee processing)</p> <p>2. <input checked="" type="checkbox"/> <b>Specification</b> [Total Pages 2] (preferred arrangement set forth below)</p> <ul style="list-style-type: none"> <li>- Descriptive title of the Invention</li> <li>- Cross References to Related Applications</li> <li>- Statement Regarding Fed sponsored R &amp; D Invention</li> <li>- Reference to Microfiche Appendix</li> <li>- Background of the Invention</li> <li>- Brief Summary of the Invention</li> <li>- Brief Description of the Drawings (if filed)</li> <li>- Detailed Description</li> <li>- Claim(s)</li> <li>- Abstract of the Disclosure</li> </ul> <p>3. <input checked="" type="checkbox"/> Drawing(s) (35 USC 113) [Total Sheets 1]</p> <p>4. <input checked="" type="checkbox"/> Oath or Declaration [Total Pages 2]</p> <ul style="list-style-type: none"> <li>a. <input type="checkbox"/> Newly executed (original or copy)</li> <li>b. <input checked="" type="checkbox"/> Copy from a prior application (37 CFR 1.63(d)) (for continuation/divisional with Box 17 completed) (Note Box 5 below)</li> <li>i. <input type="checkbox"/> <b>DELETION OF INVENTOR(S)</b> Signed statement attached deleting inventor(s) named in the prior application, see 37 CFR 1.63(d)(2) and 1.33(b).</li> </ul> <p>5. <input checked="" type="checkbox"/> <b>Incorporation By Reference</b> (useable if Box 4b is checked) The entire disclosure of the prior application, from which a copy of the oath or declaration is supplied under Box 4b, is considered as being part of the disclosure of the accompanying application and is hereby incorporated by reference therein.</p>	<p>6. <input type="checkbox"/> Microfiche Computer Program (Appendix)</p> <p>7. <input type="checkbox"/> Nucleotide and/or Amino Acid Sequence Submission (if applicable, all necessary)</p> <ul style="list-style-type: none"> <li>a. <input type="checkbox"/> Computer Readable Copy</li> <li>b. <input type="checkbox"/> Paper Copy (identical to computer copy)</li> <li>c. <input type="checkbox"/> Statement verifying identity of above copies</li> </ul>
<b>Accompanying Application Parts</b>	
<p>8. <input type="checkbox"/> Assignment Papers (cover sheet &amp; document(s))</p> <p>9. <input type="checkbox"/> 37 CFR 3.73(b) Statement <input type="checkbox"/> Power of Attorney (when there is an assignee)</p> <p>10. <input type="checkbox"/> English Translation Document (if applicable)</p> <p>11. <input type="checkbox"/> Information Disclosure <input type="checkbox"/> Copies of IDS Statement (IDS)/PTO-1449 Citations</p> <p>12. <input checked="" type="checkbox"/> Preliminary Amendment</p> <p>13. <input checked="" type="checkbox"/> Return Receipt Postcard (MPEP 503) (Should be specifically itemized)</p> <p>14. <input type="checkbox"/> Small Entity <input checked="" type="checkbox"/> Statement filed in prior application, Statement(s) Status still proper and desired</p> <p>15. <input type="checkbox"/> Certified Copy of Priority Document(s) (if foreign priority is claimed)</p> <p>16. <input checked="" type="checkbox"/> Other . Check No. 7034 for \$380.00; copies of ..... Power of Attorney and Small Entity Statement ..... (from parent application) .....</p>	

17. If a **CONTINUING APPLICATION**, check appropriate box and supply the requisite information:
☒ Continuation ☐ Divisional ☐ Continuation-in-part (CIP) of prior application No: 08/ 778,503
**18. CORRESPONDENCE ADDRESS**☐ Customer Number or Bar Code Label

(Insert Customer No. or Attach bar code label here)

or ☐ New correspondence address below

NAME	Stephen G. Rudisill				
ADDRESS	Arnold White & Durkee P.O. Box 4433				
CITY	Houston	STATE	Texas	ZIP CODE	77210-4433
COUNTRY	U.S.A.	TELEPHONE	(312) 744-0090	FAX	(312) 755-4489

Burden Hour Statement: This form is estimated to take 0.2 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Box CPA, Washington, DC 20231.

Applicants or Patentees: Richard J. Lazzara, Thomas S. Heylman and Keith D. Beatty  
Serial or Patent No.:  
Attorney's Docket No.: PA09IMPI035  
Filed or Issued:  
For: Infection-Blocking Dental Implant

**VERIFIED STATEMENT (DECLARATION) CLAIMING SMALL ENTITY STATUS**  
(37 CFR 1.9(f) and 1.27(e)) - SMALL BUSINESS CONCERN

I hereby declare that I am

- ☐ the owner of the small business concern identified below;  
☒ an official of the small business concern empowered to act on behalf of the concern identified below:

NAME OF CONCERN: Implant Innovations, Inc.  
ADDRESS OF CONCERN: 4555 Riverside Drive  
Palm Beach Gardens, FL 33410

I hereby declare that the above identified small business concern qualifies as a small business concern as defined in 13 CFR 121.3-18, and reproduced in 37 CFR 1.9(d), for purposes of paying reduced fees under Section 41(a) and (b) of Title 35, United States Code, in that the number of employees of the concern, including those of its affiliates, does not exceed 500 persons. For purposes of this statement, (1) the number of employees of the business concern is the average over the previous fiscal year of the concern of the persons employed on a full-time, part-time or temporary basis during each of the pay periods of the fiscal year, and (2) concerns are affiliates of each other when either, directly or indirectly, one concern controls or has the power to control the other, or a third party or parties controls or has the power to control both.

I hereby declare that rights under contract or law have been conveyed to and remain with the small business concern identified above with regard to the invention entitled "Infection-Blocking Dental Implant" by inventors described in

- ☒ the specification filed herewith  
☐ application serial no.: \_\_\_\_\_, filed \_\_\_\_\_  
☐ patent no.: \_\_\_\_\_, issued \_\_\_\_\_

If the rights held by the above identified small business concern are not exclusive, each individual, concern or organization having rights to the invention is listed below\* and no rights to the invention are held by any person, other than the inventor, who could not qualify as a small business concern under 37 CFR 1.9(d) or by any concern which would not qualify as a small business concern under 37 CFR 1.9(d) or a nonprofit organization under 37 CFR 1.9(e).

\*NOTE: Separate verified statements are required from each named person, concern or organization having rights to the invention averring to their status as small entities. (37 CFR 1.27)

FULL NAME: \_\_\_\_\_  
ADDRESS: \_\_\_\_\_  
☐ INDIVIDUAL ☐ SMALL BUSINESS CONCERN ☐ NONPROFIT ORGANIZATION

FULL NAME: \_\_\_\_\_  
ADDRESS: \_\_\_\_\_  
☐ INDIVIDUAL ☐ SMALL BUSINESS CONCERN ☐ NONPROFIT ORGANIZATION

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 CFR 1.28(b))

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

NAME OF PERSON SIGNING:

Keith D. Beaty

TITLE OF PERSON OTHER THAN OWNER:

Chief Executive Officer

ADDRESS OF PERSON SIGNING:

Implant Innovations, Inc.

4555 Riverside Drive

Palm Beach Gardens, FL 33410

SIGNATURE



DATE Jan. 3, 1997.

0037605-012609

**PATENT**

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In Re Application Of:	)	Atty. Docket No.: IMPI:035--1
	)	
Richard J. Lazzara	)	<u>PRIOR APPLICATION:</u>
Thomas S. Heylmun	)	
Keith D. Beaty	)	Examiner: Paul Prebilit
	)	
Application No.: Not Assigned	)	Group Art Unit: 3738
	)	
Filed: January 25, 1999	)	Class-Subclass: 128-898.000
	)	
For: Infection-Blocking Dental Implant	)	

**PRELIMINARY AMENDMENT**

Assistant Commissioner for Patents  
Washington, D.C. 20231

Attn: Box Patent Application

Dear Sir:

This application is a continuation of U.S. Application No. 08/778,503, filed January 3, 1997, now allowed.

Prior to examining the subject continuation application, please enter the following amendments.

**IN THE SPECIFICATION:**

Page 1, delete the paragraph under "Cross References To Related Applications," and add the following paragraph --This application is a continuation of U.S. Application No. 08/778,503, filed January 3, 1997, now allowed, which is a complete application claiming the benefit of U.S.

Provisional Application No. 60/009,592, filed January 4, 1996, and which is also a continuation-in-part of U.S. Application No. 08/607,903, filed February 27, 1996, now allowed, which is a continuation-in-part of U.S. Application No. 08/351,214, the parent of U.S. Application No. 09/650,594, now issued as U.S. Patent No. 5,603,338. This application is related to PCT/US95/15576.--

IN THE CLAIMS:

Please cancel Claims 2-10.

Please amend Claim 1 as follows.

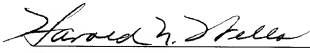
1. (Amended) A dental implant having a head portion, a neck portion, and a threaded portion for contact with bone wherein said head and neck portions are provided with a smooth surface for blocking infection and said threaded portion is roughened to promote osseointegration with bone while leaving at least the beginning of the first [one] thread adjacent said neck portion smooth and unroughened, to avoid exposure of the roughened surface to soft tissue.

REMARKS

Claim 1 is in the application after entry of the above amendments.

Respectfully submitted,

Date: 1/25/99

  
\_\_\_\_\_  
Harold N. Wells  
Reg. No. 26,044  
Arnold White & Durkee  
P.O. Box 4433  
Houston, TX 77210  
(312) 744-0090


APPLICATION FOR UNITED STATES LETTERS PATENT

for

INFECTION-BLOCKING DENTAL IMPLANT

Inventors:

Richard J. Lazzara  
Thomas S. Heylmun  
Keith D. Beaty

EXPRESS MAIL MAILING LABEL
NUMBER EM580067740US
DATE OF DEPOSIT January 3, 1997
I hereby certify that this paper or fee is being deposited with the United States Postal Service "EXPRESS MAIL POST OFFICE TO ADDRESSEE" service under 37 C.F.R. 1.10 on the date indicated above and is addressed to: Assistant Commissioner for Patents, Washington D.C. 20231
 Signature

## INFECTION-BLOCKING DENTAL IMPLANT

### **CROSS REFERENCES TO RELATED APPLICATIONS**

This is a complete application claiming the benefit of copending Provisional Patent Application Serial No. 60/009,592 filed January 4, 1996, and is also a continuation-in-part of copending application Serial No. 08/607,903 filed February 27, 1996.

### **5 FIELD OF THE INVENTION**

This invention relates to dental implants intended for insertion in a hole provided in living jawbone for eventual support of artificial teeth. It is illustrated as realized in a cylindrical dental implant having a screw thread or screw threads on its outer surface, but it is not limited to that type of implant, and is applicable to all types of implants which share  
10 the general characteristic that while they are fitted into the living jawbone they extend out of it through the overlying gingival into the mouth wherein they support artificial teeth.

### **BACKGROUND OF THE INVENTION**

The part of a dental implant that is in the living jawbone should have a roughened surface confronting the host bone for bonding with the bone, and the part of the same  
15 implant that is exposed in the mouth should have a smooth surface because a rough surface in that location might provide a site where bacteria can attach and proliferate. For hygienic reasons the exposed surfaces of the implant should be smooth, while for osseointegration purposes the surfaces of the implant confronting the host bone should be rough. Experience over many years has taught dentists practicing implantology that approximately eighteen  
20 months after an implant has been successfully placed in the jawbone of a patient and is performing its task of supporting artificial dentition, the bone surrounding the implant immediately beneath the overlying gingival tissue will in most cases be found to have receded a small distance, exposing to the soft tissue a portion of the roughened surface of the implant which had been in bone. This phenomenon is illustrated in a book by  
25 Branemark, Zarb & Albrektsson entitled "Tissue-Integrated Prostheses" 1985, p56, Fig. 1-46. This event, occurring as it does beneath the gum tissue surrounding an artificial tooth, is not immediately visible. In spite of the most diligent hygienic practice, it presents the danger that bacteria which succeed in penetrating between the tooth and its surrounding tissue may

attach themselves to the roughened surface, and there proliferate, and bring about an infection putting the implant and the tooth it supports in danger of failure.

In U.S. 4,988,299 an implant is disclosed which has a threaded portion and a smooth neck portion. No reference is made to roughening of the threaded portion or how smooth the neck portion should be. The neck portion is defined by having a diameter between the "core" diameter of the threaded portion and the outer diameter of the threads and it is disclosed to have a curved surface. The neck portion is said to have an axial length exceeding the settlement in bone level and it is intended to avoid exposure of the threads.

#### SUMMARY OF THE INVENTION

The present invention relates to an implant which is roughened to improve osseointegration with the bone but which does not provide a surface which can facilitate infection.

Observations based on practical experience of one of the present inventors over the past ten years or more have revealed that the recession described in the above-mentioned book tends to stop at the level where the implant places a load on the host bone. In a screw-type implant this level is approximately the beginning of the first turn of the screw thread near the gingival end of the implant. However, these observations also indicate that the stopping level is not precisely the same in all cases, and that in some cases the first thread may be exposed. At times, more than one thread is exposed, perhaps up to three threads.

According to the invention as illustrated in the accompanying drawings, the portion of the implant which has a roughened surface is limited to that portion which can be expected to remain in contact with the host bone after the expected bone recession has taken place. The head portion of the implant and the immediately-adjacent part of the heretofore roughened portion, including the initial part of the screw threads, are made smooth. Preferably one to three threads will be left smooth, not roughened. Typically, a length of about 3mm below the top surface of the implant will be left smooth and not roughened with the remainder of the implant. Because the amount of bone that recedes will vary with different patients, one or more smooth threads may remain permanently in the bone along with the roughened threads. Although these smooth threads may not load



the bone to the same degree as the roughened threads, nevertheless the smooth threads will still add significantly to the bone loading.

Since the exact amount of bone recession that will occur in a given patient cannot be determined in advance of the event with precision, the invention is useful to minimize the danger of infection from this source, that is, to block the infection. Good hygienic practice will continue to be required of the patient. With the invention, such good practice can be expected to be more fruitful than heretofore.

#### BRIEF DESCRIPTION OF THE DRAWINGS

The invention is described in greater detail with reference to the accompanying drawings, in which:

**FIG. 1** is a side elevation of a dental implant according to the invention; and

**FIG. 2** is an end view of the dental implant of FIG. 1

#### DETAILED DESCRIPTION OF THE INVENTION

The implant 10 has a head portion 12, a neck portion 14 and a main body 16 which is roughened on its outer surface in the region 18. Such implants are normally machined from titanium or a titanium alloy and are smooth, until a portion is roughened to facilitate osseointegration with bone. The head portion 12, the neck portion 14, and a small region 20 of the main body 16 immediately adjacent the neck portion, encompassing the first to third thread turns, are smooth. To achieve this result the portions of the implant intended to remain smooth during and after the roughening procedure may be covered during that procedure. For example, if the roughening procedure includes an acid-etching step or steps, these parts may be covered with a suitable wax prior to immersing the implant in the etching acid. A preferred method of roughening the surface is disclosed in copending U. S. patent application Serial No. 08/607,903 mentioned above and incorporated by reference herein. The process has two steps, the first being removal of native oxide from titanium by contact with an aqueous hydrofluoric acid solution, followed by etching with a mixture of sulfuric and hydrochloric acids.

When the implant 10 is first installed in a bore prepared for it in a patient's jawbone, the implant is buried in bone up to and including the head portion 12, to the level indicated by line A - A in figure 1. The healing phase then begins, during which new bone is formed

close to the immobile, resting implant, and the implant will remain buried in the bone, up to the head portion. All the implant, including the neck portion 12, will confront the host bone in the early part of the healing phase. Thereafter when the implant is loaded and the remodeling phase begins (overlapping the healing phase) during exposure to masticatory forces, the newly formed bone remodels under the applied load until, after about eighteen months, a steady state is achieved. In this state the anchoring bone will be found to have undergone a reduction in height (bone recession) immediately adjacent the implant. The amount of this recession can vary from case to case, between the level indicated by the solid curved lines 30 and the level indicated by the broken curved lines 32, for example, exposing the head portion 12, the neck portion 14 and some or all of the immediately adjacent region 20 of the threaded main body 16. In some cases region 20 may extend further, up to about the third thread. Another way to define regions 14 and 20 is that roughening of the implant begins about 3mm below the upper flat surface 15 of the implant 10, which receives connecting parts of the dental restoration.

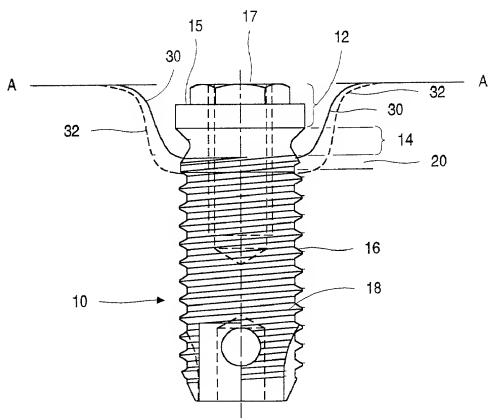
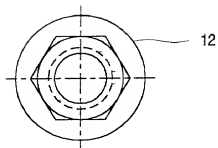
According to the invention, that region 20 immediately adjacent to the neck portion 14 of the implant is maintained smooth so that when the remodeling phase is completed, there will be little or no roughened implant surface exposed to the soft tissue under the dental restoration that is supported on the implant. The exact dimensions of the smooth region 20 cannot be precisely established for all cases. A length corresponding to about one turn of the screw thread is suitable for many cases, but up to three threads may be left smooth.

## CLAIMS

1. A dental implant having a head portion, a neck portion, and a threaded portion for  
2 contact with bone wherein said head and neck portions are provided with a smooth surface  
for blocking infection and said threaded portion is roughened to promote osseointegration  
4 with bone while leaving at least one thread adjacent said neck portion smooth and  
unroughened.
2. A dental implant of claim 1 wherein up to three threads adjacent said neck portion  
2 are left smooth.
3. A dental implant of claim 1 wherein a length of about 3 mm of said implant  
2 including said head, neck, and adjacent threaded portions is left smooth.
4. A dental implant of claim 1 wherein the head, neck, and threaded portions left  
2 smooth have a surface created by machining.
5. A dental implant of claim 1 wherein said implant is titanium or a titanium alloy and  
2 said roughness is created by a two-stop process in which the native oxide is removed by  
contact with an aqueous hydrofluoric acid solution and followed by etching of the resulting  
4 surface with a mixture of sulfuric and hydrochloric acids.
6. A dental implant comprising  
2 (a) a roughened bottom portion for facilitating osseointegration with bone;  
(b) a smooth neck portion adjacent said roughened portion for contact with  
4 gingival tissue; and  
(c) a smooth head portion adjacent said neck portion for receiving a dental  
6 restoration; wherein said roughened portion of (a) is threaded and at least one thread  
adjacent said neck portion is left smooth and unroughened.
7. A dental implant of claim 6 wherein up to three threads adjacent said neck portion  
2 are left smooth and unroughened.







## DECLARATION

PATENT  
IMPI:035

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe the below named inventors are the original, first and joint inventors of the subject matter which is claimed and for which a patent is sought on the invention entitled "**INFECTION-BLOCKING DENTAL IMPLANT**", the specification of which was filed on January 3, 1997 as Application Serial No. 08/778,503.

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, §1.56(a).

**PRIOR FOREIGN/PCT APPLICATION(S) FILED WITHIN 12 MONTHS (6 MONTHS FOR DESIGN)  
PRIOR TO THIS APPLICATION AND ANY PRIORITY CLAIMS UNDER 35 U.S.C. §119(a)-(d)**

I hereby claim foreign/pct priority benefits under Title 35, United States Code, §119 of any foreign/pct application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

PRIOR FOREIGN/PCT APPLICATION(S)

Priority Claimed

Yes/No

(Number)	(Country)	(Date Filed)
----------	-----------	--------------

**CLAIM FOR BENEFIT OF PRIOR U.S. PROVISIONAL APPLICATIONS(S) (35 U.S.C. § 119(e))**

I hereby claim the benefit under Title 35, United States Code, §119(e) of any United States provisional application(s) listed below:

(Application Serial No.)	(Filing Date)	(Status)
60/009,592	January 4, 1996	Pending

**CLAIM FOR BENEFIT OF PRIOR U.S. APPLICATIONS(S) (35 U.S.C. § 120)**

I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, §1.56(a), regarding events which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

(Application Serial No.)	(Filing Date)	(Status)
08/607,903	February 27, 1996	Pending

I hereby direct that all correspondence and telephone calls be addressed to **Stephen G. Rudisill, Arnold, White & Durkee, P.O. Box 4433, Houston, Texas 77210, (312) 744-0090.**

I hereby declare that all statements made of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Inventor's Full Name: Richard J Lazzara  
(First) (Initial) (Last)

Inventor's Signature: [Signature]

Date: 22 May 97 Country of Citizenship: U.S.A.

Residence: 1814 North "R" Street, Lake Worth, Florida 33460, U.S.A.  
(Include number, street name, city, state, and country)

Inventor's Full Name: Thomas S Heylman  
(First) (Initial) (Last)

Inventor's Signature: [Signature]

Date: 5-9-97 Country of Citizenship: U.S.A.

Residence: 387A Willow Pond Road, West Palm Beach, Florida 33417 U.S.A.  
(Include number, street name, city, state, and country)

Inventor's Full Name: Keith D Beaty  
(First) (Initial) (Last)

Inventor's Signature: [Signature]

Date: 5-20-97 Country of Citizenship: U.S.A.

Residence: 16 Riverside Drive West, Jupiter, Florida 33469-2930 U.S.A.  
(Include number, street name, city, state, and country)

00227605-012500



PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re Application Of: ) Atty. Docket No.: IMPI:035  
)  
RICHARD J. LAZZARA, ) Examiner: Paul Prebilic  
THOMAS S. HEYLMUN and )  
KEITH D. BEATY ) Group Art Unit: 3308  
)  
Application No: 08/778,503 )  
)  
Filed: January 3, 1997 )  
)  
For: INFECTION-BLOCKING DENTAL )  
IMPLANT )

ELECTION UNDER 37 CFR §§ 3.71 AND 3.73  
AND POWER OF ATTORNEY

Assistant Commissioner for Patents  
Washington, D.C. 20231

Dear Sir:

The undersigned, being Assignee of record of the entire interest in the above-identified application by virtue of an Assignment recorded in the U.S. Patent and Trademark Office as set forth below, hereby elects, under 37 CFR § 3.71, to prosecute the application to the exclusion of the inventors.

The Assignee hereby revokes any previous Powers of Attorney and appoints:

Timothy R. Baumann, Reg. No. 40,502  
Michael J. Blankstein, Reg. No. 37,097  
Mary Jo Bolding, Reg. No. 34,713  
Daniel J. Burnham, Reg. No. 39,618  
Mark V. Campagna, Reg. No. P42,380  
Ronald B. Coolley, Reg. No. 27,187  
Roger J. French, Reg. No. 27,786  
Janet M. Garetto, Reg. No. P42,568  
John C. Gatz, Reg. No. P41,774  
Paul R. Kitch, Reg. No. 38,206  
Alejandro Menchaca, Reg. No. 34,389  
Stephen G. Rudisill, Reg. No. 20,087  
Steven R. Santema, Reg. No. 40,156

Jon D. Shutter, Reg. No. 41,311  
Steven Z. Szczepanski, Reg. No. 27,957  
Mark A. Thomas, Reg. No. 37,953  
Harold N. Wells, Reg. No. 26,044  
J. Paul Williamson, Reg. No. 29,600

each an attorney or agent for the firm of ARNOLD, WHITE & DURKEE, as its attorney or agent for so long as they remain with such firm, with full power of substitution and revocation, to prosecute the application, to make alterations and amendments therein, to transact all business in the U.S. Patent and Trademark Office in connection therewith, to receive any Letters Patent, and to file any request for a certificate of correction that may be deemed appropriate for one year after issuance of such Letters Patent.

Pursuant to 37 CFR § 3.73, the undersigned has reviewed the evidentiary documents, specifically the Assignment referenced below, and certifies that to the best of his knowledge and belief, title remains in the name of the Assignee, Implant Innovations, Inc.


Please direct all communications as follows.

Stephen G. Rudisill  
ARNOLD, WHITE & DURKEE  
P.O. Box 4433  
Houston, TX 77210-4433  
(312) 744-0090

IMPLANT INNOVATIONS, INC.

Date:

3-4-98



Edward Sabin

Vice President of Finance and Administration

Assignment

☐ Concurrently filed

☒ Previously recorded

Date: December 8, 1997  
Reel: 8843  
Frame: 0011